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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/565,311	01/18/2006	Barbara Hildegard Pause		7382

7590
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Longmont, CO 80503

EXAMINER

STEELE, JENNIFER A

ART UNIT	PAPER NUMBER
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1794

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/565,311	Applicant(s) PAUSE, BARBARA HILDEGARD	
	Examiner JENNIFER STEELE	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

1. Claim 1, 3-12 rejected under 35 U.S.C. 103(a) as obvious over Worley (US 2003/0054141) and further evidenced by Holdridge (US 4,462,390). Claim 1

describes a membrane material for fabric structures having enhanced reversible thermal properties, said membrane comprising a

- Basic woven fabric which is coated continuously at least on one side with
- a polymeric compound consisting of
 - an elastomeric material and
 - at least one phase change material and
 - a cross-linking agent
 - whereby the phase change material is first melted and mixed into a liquid component of the elastomeric material

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- and then the cross-linking agent is added to the mixture which is applied to the basic woven fabric by knife coating and cured there
- whereby the cross-linking agent cross-links the phase change material while in its liquid state into the elastomeric structure
- and said membrane material becomes more translucent when the phase change changes from its solid into its liquid stage during absorptions of latent heat which also reduces the heat flux through the membrane material into the fabric

Worley teaches a coated article having reverse enhanced thermal properties (ABST).

Worley teaches the article can be a woven fabric [0016].

Worley teaches continuous coatings containing phase change materials are applied to fabrics [0003]. Worley teaches the polymeric coating material can be a thermoplastic polymer or mixture of thermoplastic polymer [0046] that include polyamides, polyurethanes, rubbers such as polybutadiene, polyisoprene, polyesters, polyolefins, polystyrenes, silicon containing polymers such as polydimethyl siloxane, polycarbomethyl silane, polyfluorocarbons that are known in the art to be elastomeric [0048]. Polybutadiene, polyisoprene and silicon polymers are known in the art to be elastomeric. The current Application teaches in paragraph [0030] of the specification that the elastomeric materials can comprise silicone rubber, acrylate rubber, butyl rubber, nitrile rubber or chloroprene rubber and thermoplastic elastomers with fluorine,

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polyurethane or polyester as basic components are suitable. Therefore the polymers of the Worley are equated with the polymers of the current application.

Worley teaches that depending on the particular application the coating may comprise one or more additives including crosslinkers such as peroxides and azo compounds [0050]. Worley further teaches that a polymer comprising a polymeric phase change material may be capable of crosslinking, entanglement or hydrogen bonding in order increase its toughness or its resistance to heat, moisture or chemicals [0038].

Worley teaches embodiments where the coated article may be manufactured such that the phase change materials are mixed with the polymers to form a blend and embodiments where the monomers or low molecular weight polymers may be initially provided (in the blend) which upon curing, drying or crosslinking are converted to a polymeric material having the desired molecular weight or chain structure [0052].

Worley continues to teach that after the blend has been applied to the substrate, the blend may be crosslinked to form a coating covering the substrate [0058]. Worley is silent with respect to the state of the PCM when it is mixed into the liquid polymer blend. In other words, Worley differs and does not specifically state that the PCM is in a liquid state when mixed with the polymer blend. The claim limitation that the PCM is in a liquid state prior to mixing is a process limitation. It should be noted that even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the

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same or an obvious variant from a product of the prior art, the claim is unpatentable even though a different process made the prior product. In re Thorpe, 227 USPQ 964,966 (Fed. Cir. 1985). The burden has been shifted to the Applicant to show unobvious differences between the claimed product and the prior art product. In re Marosi, 218 USPQ 289,292 (Fed. Cir. 1983).

Worley differs from the current application and does not teach that the coated fabric changes in translucency when the PCM changes from a solid into its liquid state during absorption of heat. It is known in the art and evidenced by Holdridge that PCM's change state from liquid to solid when absorbing and releasing heat. And Holdridge teaches that the translucency also changes when the PCM changes state from liquid to solid state (Holdridge, col. 6, lines 15-25). It would have been obvious to one of ordinary skill in the art to employ a PCM in a polymeric coating motivated to produce a fabric that would change in translucency when the PCM absorbs and releases heat.

Worley differs and teaches embodiments that are discontinuous coatings. Worley is directed to a directed to a discontinuous coating that will provide more flexibility, softness, air permeability and water vapor transmission. However Worley teaches that prior art continuous coatings are known to incorporate phase change materials to provide enhanced reversible thermal properties [0003]. It would have been obvious to one of ordinary skill in the art to employ the coating composition of Worley as a continuous coating.

Worley's embodiments and disclosure encompasses the claimed materials of an elastomeric polymer mixed with a PCM and a crosslinking agent. Worley teaches it is

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known in the art to apply continuous PCM coatings. It is also reasonable to presume that the claimed property of translucency would be inherent to the structure of Worley. The inherency of the translucent property is further evidenced in the teaching of Holdridge.

The burden is on the Applicant to show that the claimed process limitation of a mixing a liquid PCM would produce a coating that is structurally different from Worley. Based on the claims, it is not clear if a solid PCM versus a liquid PCM was crosslinked into the coating that the resulting structure is different. The structure could be an elastomer crosslinked around a PCM and or an elastomer crosslinked to a PCM, or a copolymer. Applicant can also produce evidence that the claimed property of translucency is unexpected and that the disclosure of Worley does not produce the claimed property.

Response to Arguments

2. Applicants amended claim 1 and the 35 USC 112 2nd paragraph rejection has been withdrawn.
3. Applicant's amendments and arguments, with respect to the 35 USC 102 (a) and (e) rejection over Worley have been fully considered and are persuasive. The 35 USC 102 (a) and (e) of claims 1, 3-12 has been withdrawn. Applicant's arguments with respect to claim 1, 3-12 have been considered but are moot in view of the new ground(s) of rejection.

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4. Applicant's arguments and statements that Worley is not teaching the same type of crosslinked structure as the present invention are not persuasive.

- Applicant argues that Worley teaches the PCM itself can be capable of cross-linking while the present application contains a cross-linking agent in addition to the PCM which allows for the PCM to be crosslinked into the elastomeric structure.

Worley teaches this in paragraph [0038]. Applicant does not distinguish the PCM of claim 1 from a polymeric PCM or another type of PCM that would or would not self crosslink. The claims as written do not limit the PCM from one that would or would not self crosslink. Applicant's arguments are not commensurate with the scope of the claims.

- Applicant states that the PCM's are not capable of crosslinking and the crosslinking agent disclosed in the present application is not an additive which might be used to improve the properties of a coating. The crosslinking agent is a necessary part of the system to avoid leakage of the phase change material while in its liquid stage.

Based on these two statements, it is not clear what the difference between Worley's crosslinked polymer and PCM coating versus Applicant's crosslinked polymer and PCM coating is. It is not clear if the elastomeric polymer is crosslinked **around** the PCM to incorporate the PCM in the structure or the elastomeric polymer **to** the PCM to form a type of copolymer.

These arguments are central to understanding if Applicant's structure is different from the structures disclosed in Worley. Worley teaches in paragraph [0052] that monomer units or low molecular weight polymers may be initially provided, which upon curing, drying, crosslinking, reacting or solidifying, are converted to a polymeric structure having the desired molecular weight or chain structure. This paragraph also states that the PCM is mixed or blended with the liquid polymer and this is included to mean that the PCM can be mixed with a monomer and crosslinked to the desired molecular weight structure.

The burden is on the Applicant to present evidence that shows that the present invention is a different structure than Worley or has an unexpected property or result. Applicant's claims are directed to an article and therefore the structure of the article is what must be distinguished from the prior art. Evidence that shows when a PCM is incorporated or crosslinked in the elastomer in a solid state and the structure or coating does not result the desired coating and properties, could overcome the prior art.

5. Applicants argue that Worley does not teach a continuous coating and for this reason the rejection is now a 35 USC 103 rejection. As Worley teaches that continuous coatings are known in the art, it would have been obvious to produce a continuous coating.

6. Applicants argue that in the present invention the PCM is liquefied and then applied to the elastomeric material while the PCM is in a liquid stage and PCM becomes crosslinked into the structure. The phase change material creates a continuum within the elastomeric structure and that because of the continuous distribution of the PCM

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within the elastomeric material, the light transmission of the whole coating layer changes when this phase change occurs. As noted above, the burden is on the Applicant to show that dispersing a solid PCM would not produce the same result or provide evidence that the crosslinked structure is different than the crosslinked structures of Worley. Evidence can be submitted in the form of a Rule 1.132 Declaration. Examiner has relied upon Holdbridge to teach that when the PCM changes from solid to liquid the PCM become transparent. The PCM of Holdbridge is not combined with an elastomeric polymer to form a coating and further it is not crosslinked with or into an elastomeric coating. It is presumed that the coatings of Worley would have the desired change in translucency. The burden is on the Applicant to show that this result is unexpected.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNIFER STEELE whose telephone number is (571)272-7115. The examiner can normally be reached on Office Hours Mon-Fri 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on (571) 272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. S./
Examiner, Art Unit 1794

/Elizabeth M. Cole/
Primary Examiner, Art Unit 1794

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